

Sexually Transmitted Disease Morbidity

2002

Washington State




Infectious Disease & Reproductive Health
STD/TB Services & IDRH Assessment Unit


Contents

Executive Summary	1
Data Sources and Methods.....	2
Guidelines to Prevent Misuse of Data.....	2
Glossary.....	3
Chlamydia	5
Figure 1. Reported Chlamydia Cases and Incidence Rates, 1992-2002	5
Table A. Chlamydia Incidence Rates by Race, 2001-2002	6
Figure 2. Age-Specific Chlamydia Incidence Rates by Gender, 2002	7
Figure 3. Chlamydia Incidence Rates by County, 2002 on Washington State Map	7
Figure 4. Chlamydia Incidence Rates by County, 2002, Ranked from Highest to Lowest	8
Gonorrhea	9
Figure 5. Reported Gonorrhea Cases and Incidence Rates, 1991-2001	9
Figure 6. Age-Specific Gonorrhea Incidence Rates by Gender, 2001	10
Table B. Gonorrhea Incidence Rates by Race, 2001-2002	11
Figure 7. Gonorrhea Incidence Rates by County, 2001 on Washington State Map	12
Figure 8. Gonorrhea Incidence Rates by County, 2001, Ranked from Highest to Lowest	12
Syphilis	13
Figure 9. Reported Syphilis Cases by Disease Stage, 2001	13
Figure 10. Reported Syphilis Cases by County, 2001 on Washington State Map	14
Figure 11. P & S Syphilis Incidence Rates/Cases, King Co. vs. Washington State, 2001	15
Figure 12. P & S Syphilis Incidence Rates by Gender, 1994-2002.....	15
Other Sexually Transmitted Diseases.....	16
Tables	17
Table 1. Reported Chlamydia Cases and Incidence Rates by Gender and County, 2002	17
Table 2. Reported Chlamydia Cases and Incidence Rates by Age (15-24 years) and County, 2002	18
Table 3. Reported Gonorrhea Cases and Incidence Rates by Gender and County, 2002	19
Table 4. Reported Gonorrhea Cases and Incidence Rates by Age (15-24 years) and County, 2002	20
Table 5. Reported STD Cases and Incidence Rates by Disease and County, 2002	21
Appendix	23

**This document is a publication of the
Washington State Department of Health**



**The Department of Health Works
to Protect and Improve
the Health of People in Washington State**



For more information or to obtain copies of this report contact:

Infectious Diseases and Reproductive Health

STD/TB Services

NewMarket Industrial Campus
7211 Cleanwater Lane, Bldg. 14
P.O. Box 47842
Olympia, WA 98504-7842

(360) 236 - 3460
FAX: (360) 236 - 3470

<http://www.doh.wa.gov/cfh/STD/morbidity.htm>

Executive Summary

The 2002 annual Sexually Transmitted Disease (STD) summary includes morbidity data and incidence rates for Washington State's legally reportable STDs. These include gonorrhea, chlamydia, syphilis, herpes simplex-initial genital infection, chancroid, lymphogranuloma venereum (LGV) and granuloma inguinale (GI). Sexually transmitted diseases are the most commonly reported communicable diseases in Washington State.

Chlamydia

In 2002, chlamydia continued to be the most commonly reported STD in Washington State. Reported cases totaled 14,936, yielding a statewide incidence rate of 247.2 per 100,000 persons. Females continued to be selectively tested more frequently and, consequently, diagnosed at a higher rate than males. The statewide chlamydia incidence rate for females was 362.9 per 100,000, which was almost three times the incidence rate for males — 130.6 per 100,000. Chlamydia cases reported and incidence rates increased in calendar year 2002 by 9.5% and 8.4% respectively over those observed in 2001.

Gonorrhea

In 2002, reported gonorrhea cases decreased to 2,925 from the 2,991 cases reported in 2001, yielding a statewide gonorrhea incidence rate of 48.4 per 100,000 persons, a decrease of 3.4% from 2001. Gonorrhea screening is universal in all public STD clinics in Washington State and the gender-specific incidence rates are considered to accurately reflect true disease incidence. The female gonorrhea rate in 2002 was 39.3 per 100,000 and the male gonorrhea rate was 57.1 per 100,000. The gonorrhea incidence rate among males increased slightly from 2001, while the rate among females decreased slightly over the same time period. The male-to-female gonorrhea case ratio in 2002 was 1.44 to 1, an increase of 10% from 2001. This ratio provides evidence for a continuing gonorrhea outbreak among men who have sex with men (MSM).

Syphilis

Primary, secondary, and early latent cases of syphilis totaled 93 in 2002, an increase of 17 cases from 2001. Of the 93 early syphilis cases, 60 (65%) were reported from King County. The statewide primary and secondary syphilis rate is 1.2 per 100,000 in 2002. When cases of late latent/late syphilis are included in this calculation, the statewide syphilis rate remains stable at 2.5 per 100,000. The number of primary and secondary cases statewide was 70 in 2002, an increase of 23% in reported cases of P & S syphilis from 2001. Two cases of congenital syphilis were reported in 2002.

Other STDs

In 2002, 1,908 cases of initial genital herpes and 6 cases of neonatal herpes (infection in infants < 1 year in age) were reported, yielding an incidence rate of 31.7 per 100,000 population. One case of chancroid was reported from Pierce County in 2002; no cases of lymphogranuloma (LGV) or granuloma inguinale (GI) were identified in 2002.

Data Sources, Methods and Limitations

Public and private health care providers complete confidential case reports, which are submitted to local health jurisdictions. These reports are subsequently forwarded to the Washington State Department of Health, STD/TB Services Section and are the primary data source for reported cases of sexually transmitted diseases. Chlamydia, gonorrhea, and syphilis require laboratory confirmation to be counted. Genital herpes may be reported without laboratory confirmation.

A wide variety of persons and agencies submit confidential case reports and the quality and usefulness of specific data elements can vary widely. Information on race and ethnicity are often missing and should be considered unreliable in quantitative analysis. Other data are completely reported, e.g., provider of care, age, sex and county of residence. In 1998, the confidential database that houses STD case report information was modified to be dynamic, allowing for case reports to be corrected or changed as new information on identified cases becomes available. Because of this change, the statistics in this report are for STD case information known as of January 28th, 2003.

Crude incidence rates (number of cases/population) were calculated on an annual basis per 100,000 persons. In this report the 2002 rates for all Washington counties were calculated by dividing the number of cases reported for that county in 2002 by the projected 2002 county-specific population (projections by OFM based on the 2000 census and obtained in February of 2003). Rates were not calculated for counties reporting five or fewer cases because rates based on low case-counts are considered statistically unreliable. Crude rates are used for the purposes of this report because age-adjusted rates may mask important trends and may result in over- or under-estimation of the true burden of disease.

Data Limitations - Clinically diagnosed cases of STDs (with laboratory confirmation) may be under-reported through this surveillance system. Presumptively diagnosed cases in some instances may not be completely reported, as is also the case with asymptomatic cases not presenting with an STD-related illness. However, clinical practice recommendations from the Centers for Disease Control and Prevention (CDC) state all bacterial STDs should receive laboratory confirmation. Depending upon diagnosing practices, completeness of reporting may vary by source of health care. Some items are known to be under-reported or misreported, e.g., race, ethnicity. Care should be exercised in interpreting these data in light of known data limitations.

Guidelines to Prevent Misuse of Data

Ready access to data by persons unfamiliar with the sources or unacquainted with epidemiology and statistics may lead to misinterpretation or misrepresentation of information. This could result in inappropriate decision-making and potential misdirection of resources. The following guidelines may help prevent data misuse and should always be considered when reviewing data from any source:

1. Data presented in this report represent new, incident infections reported during 2002, not persons.
2. Data presented in this report are based on cases reported to local health jurisdictions and to the STD/TB Services Section, Infectious Disease & Reproductive Health, Washington State Dept. of Health. These data are representative of infections among persons receiving/seeking care for symptomatic and asymptomatic STDs, reproductive health services or other care.

3. Small increases and decreases in numbers can look disproportionately large if the actual number of cases is small. For example, if two cases of chlamydia are counted in a particular county in one year and three cases are counted in the next year, this is an increase of 50%. This may sound significant, but a change of one case is not. Caution is warranted.

We encourage anyone with specific questions about how these data should be interpreted to contact STD/TB Services at (360) 236 - 3460.

Glossary

Age-Specific Incidence Rate - An age-specific rate is a rate in which the number of events and population at risk are restricted to an age group [e.g., the numerator (reported cases) and the denominator (mid-year population at risk) refer to a specific age group]. Age-specific rates are useful in comparing age-defined subgroups when rates are strongly age-dependent, as is the case with sexually transmitted diseases.

Case - An episode of disease. If a person is diagnosed with more than one STD in a year, each infection is counted as a separate case.

Confidence Interval - The confidence interval (CI) evaluates the influence of chance or random variability on the statistical estimate or rate (Selvin, 1996). Surveillance data, even based on complete counts, may be affected by chance. If variation in the occurrence of the disease is essentially random and not affected by differences in diagnosing or reporting, then confidence intervals may be calculated to facilitate comparisons over time, between groups, or between geographic locations (e.g., counties). In this situation, calculated confidence intervals should be based on a Poisson probability distribution. In general, if confidence intervals for two separate rates overlap, there is no statistically significant difference between the two rates.

Narrow confidence intervals for rates indicate greater certainty that the calculated rate is a reliable approximation of the true rate. Conversely, wide confidence intervals signal greater potential variability and less certainty that the calculated rate is a good estimate of the true rate.

Crude Rate - The number of events, e.g., reported cases, divided by the total mid-year population. This rate is not “adjusted” or “standardized” for different population discrepancies. In general, no rates should be calculated if the number of events is fewer than five because the rates are considered unstable. Incidence rates allow comparisons between two or more populations by standardizing the denominator and are the most appropriate statistic to use when investigating differences between groups.

Denominator - The lower portion of a fraction used to calculate a rate or ratio; usually, this is the mid-year population. The source for denominator data used in this report was: Washington State Adjusted Population Estimates, Office of Financial Management, Feb, 2003.

Numerator - The upper portion of a fraction used to calculate a rate or a ratio, e.g., new cases identified and submitted by providers to local health jurisdictions and forwarded to the State Department of Health, STD/TB Services Section.

Race and Ethnicity - The STD confidential case report includes race and ethnicity as two separate categories. Race options include White, Black, Asian, Native Hawaiian/Other Pacific Islander, American Indian/Alaska Native, and Other/Unknown. Ethnicity options include Hispanic, Non-Hispanic, and Unknown. Following the

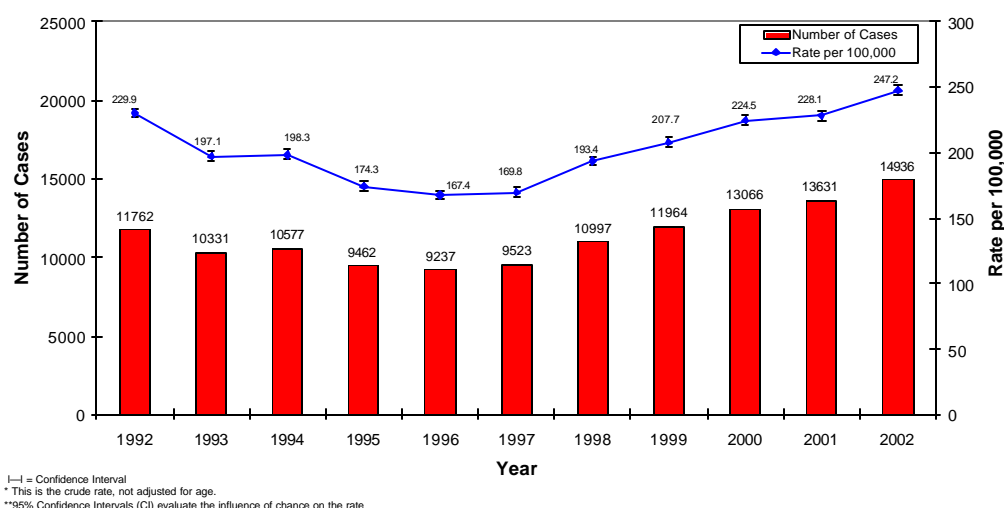
enumeration technique of the United States Census Bureau and the Washington State Center for Health Statistics, race and ethnicity are counted separately. For example, if a case report indicates “White” and “Hispanic”, the case is counted both as White and as Hispanic. However, historical practice in disease surveillance by the Centers for Disease Control and Prevention often treats Hispanic as a racial category. In light of this difference, care must be taken in comparing Washington State data with national or other state data. Disease rates in this report are presented only in tabular form by race and ethnicity using categories employed on the 2000 census, in part due to the uncertainty in bridging Census 2000 and historical race & ethnicity categories and the high proportion of missing race and ethnicity data on STD case reports.

Chlamydia

Chlamydia trachomatis is the most commonly reported bacterial STD in the United States. Estimates indicate approximately 3 million new infections each year (Kaiser Family Foundation, 1998), of which only a fraction, 783,242 were reported to CDC in 2001. Chlamydia infections in women and in many men are usually asymptomatic, leaving a large proportion of infected individuals with little or no reason to seek screening and/or treatment. Comprehensive screening and treatment of infected individuals have been shown to significantly reduce the prevalence of chlamydial infections. Reductions of up to 60% in the incidence of chlamydia infection have been observed in managed care settings as a result of routine screening (Scholes 1996). Re-testing of infected individuals at 10 to 12 weeks post-treatment (*not* test-of-cure screening) can also be highly effective in identifying repeat infection and should be adopted as a standard of care for patient management.

Since 1988, Washington State has participated in chlamydia screening and prevalence monitoring activities through the Infertility Prevention Project (IPP). All women attending STD clinics, and women seeking reproductive health services in other facilities who meet selective screening criteria, are the population targeted for chlamydia screening through the IPP. Genital tract chlamydial infections are a major cause of pelvic inflammatory disease (PID), ectopic pregnancy and infertility among women; thus IPP efforts are directed specifically at the female population. Recent efforts at improving the standard of care for male partners of infected women have resulted in increased reporting of male cases. A more sensitive testing method for detecting chlamydial infection in cervical specimens from women and in urine samples from men has also been employed, which may have resulted in elevated reporting of cases. In 2001, Washington State initiated a public awareness campaign in six counties in eastern and western Washington aimed at encouraging asymptomatic men 15 – 29 years old to be screened for chlamydial infection. Male chlamydia incidence rates in these project sites was significantly higher than male rates observed in other parts of the state, 146 per 100,000 versus 123 per 100,000.

Figure 1. Reported Chlamydia Cases and Incidence Rates*, Washington State, 1992 - 2002



State-Level Chlamydia Trends

Figure 1 reports the number of chlamydia cases and the calculated incidence rate for Washington State 1992 to 2002. After significant declines through the mid 1990s, reported chlamydia cases have increased steadily since 1996. Though the number and rate of chlamydia infection has increased over the last six years, the incidence rate for Washington State, 247 per 100,000 persons continues to remain below the most recently reported national incidence rate of 278.3 per 100,000 for 2001 (CDC, 2001).

Figure 2 presents the age-specific incidence rate by gender for chlamydia cases reported in Washington State in 2002. Of immediate note in this figure are the disproportionate incidence rates among younger women versus young men:

- Peak female age-specific rates in 15-19 year olds at 2,038.9 per 100,000
- Peak male age-specific incidence in 20-24 year olds, 695.0 per 100,000
- 73.2% of all cases reported among 15-24 year-olds
- Increase in age-specific incidence rates of 6.3% noted among females 15-24

Several factors contribute to this pattern, including selective screening of young women in the 15 – 24 age group. The overall rate of chlamydia among women is observed to be 362.9 per 100,000 while the male rate is almost one third of females at 130.6 per 100,000. Men diagnosed with nongonococcal urethritis (NGU) are often treated presumptively; no laboratory tests are performed and no case report is completed. Laboratory confirmation of chlamydia infection would automatically trigger a report to the local health jurisdiction and the Department of Health. For this reason, chlamydia may be significantly under-reported among males. In light of this, and the well-documented disparity in screening males versus females in reproductive health settings, the true chlamydia morbidity may be much closer to 1:1 for males and females.

A significant proportion of chlamydia cases were reported without race (19.2%) and ethnicity (27.8%) information in 2002. No statistically meaningful statements relating to relative difference or similarity in rates between race and ethnicity can be made given these missing data, however Table A presents race and ethnicity data in categories as introduced by the Census Bureau in the 2000 Census. STD case reports were changed to reflect these new race schema in 2001 and rates calculated using this new system are also presented in Table A.

Table A. Chlamydia Cases and Rates for 2001 and 2002 by Census 2000 Race Categories,

Race Category	Cases in 2001*	Rate per 100,000** 2001	Cases in 2002*	Rate per 100,000** 2002
White	7547	154.4	8235	166.6
Black	2074	1,084.70	2320	1,189.60
Native American/Ak. Native	529	553.4	587	613.8
Asian	548	166.8	648	196.1
Native Hawaiian/Other P.I.	135	564.9	194	790.2
Other Race	379	162.6	377	160.7
Multiple Race	207	96.2	260	118.8
Hispanic Origin***	2243	500.5	2138	472.4

Race data missing for 16.2%, ethnicity data missing for 23% of cases in 2001,

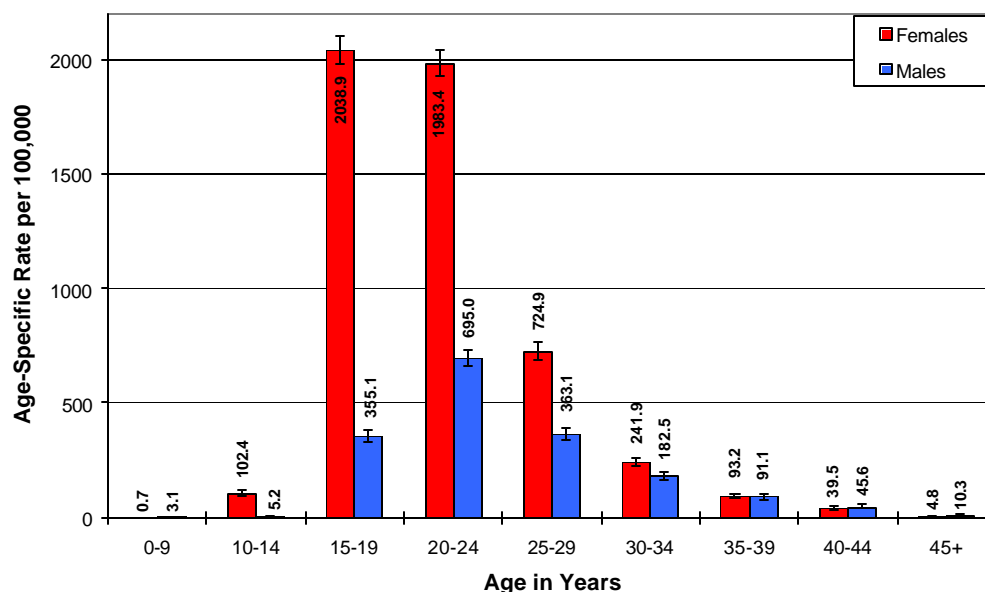
Race data missing for 19.2%, ethnicity data missing for 27.8% of cases in 2002,

* Due to multiple race option, total will exceed number of reported cases.

** Denominators Washington State Adjusted Population Projections based on OFM population growth estimates, Feb 2003.

***Ethnicity not exclusive of race, i.e. cases can be counted as both White and Hispanic

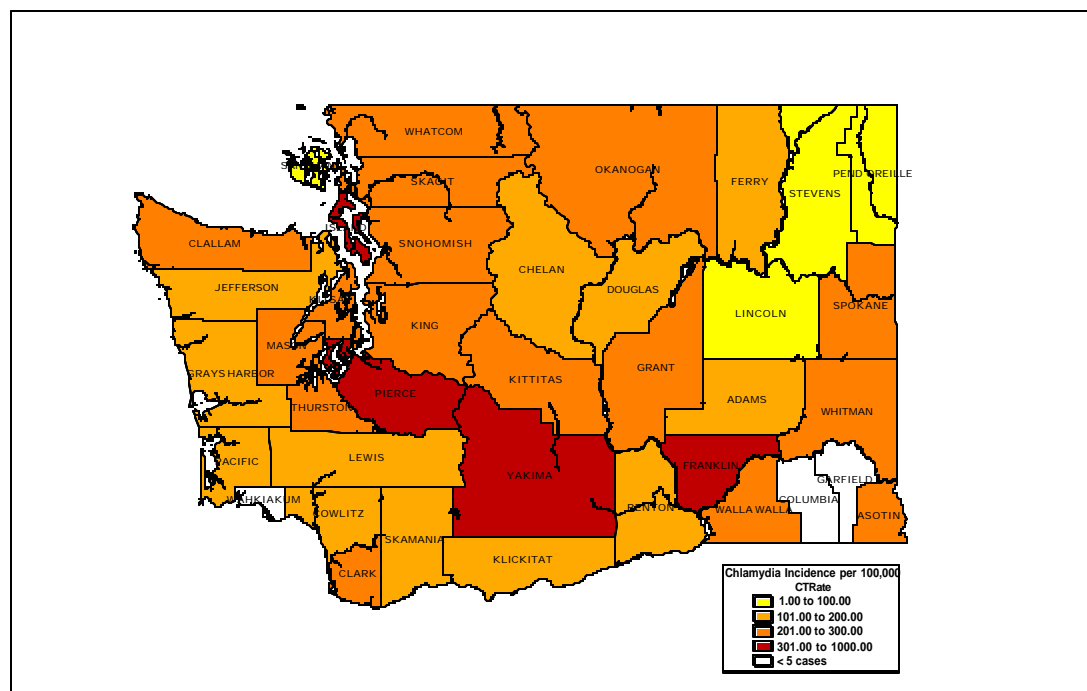
Figure 2. Age-Specific Chlamydia Incidence Rates* by Gender, Washington State, 2002



I—I = Confidence Interval
 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.
 * Age missing for 191 (1.3%) cases and excluded from calculated rate.

Lack of a true consensus on a biological basis for race and absence of objective standards for racial/ethnic classification in disease surveillance, argues for a cautious approach to interpreting disease incidence rates by race or ethnicity. Race and ethnicity may also be correlated with other potentially significant ecological determinants of health status, such as socio-economic status, geographic variation in access to health care services, and sexual mixing patterns; analysis by race and ethnicity may be confounded by these unknown factors.

Figure 3. Chlamydia Incidence Rates by County, Washington State, 2002

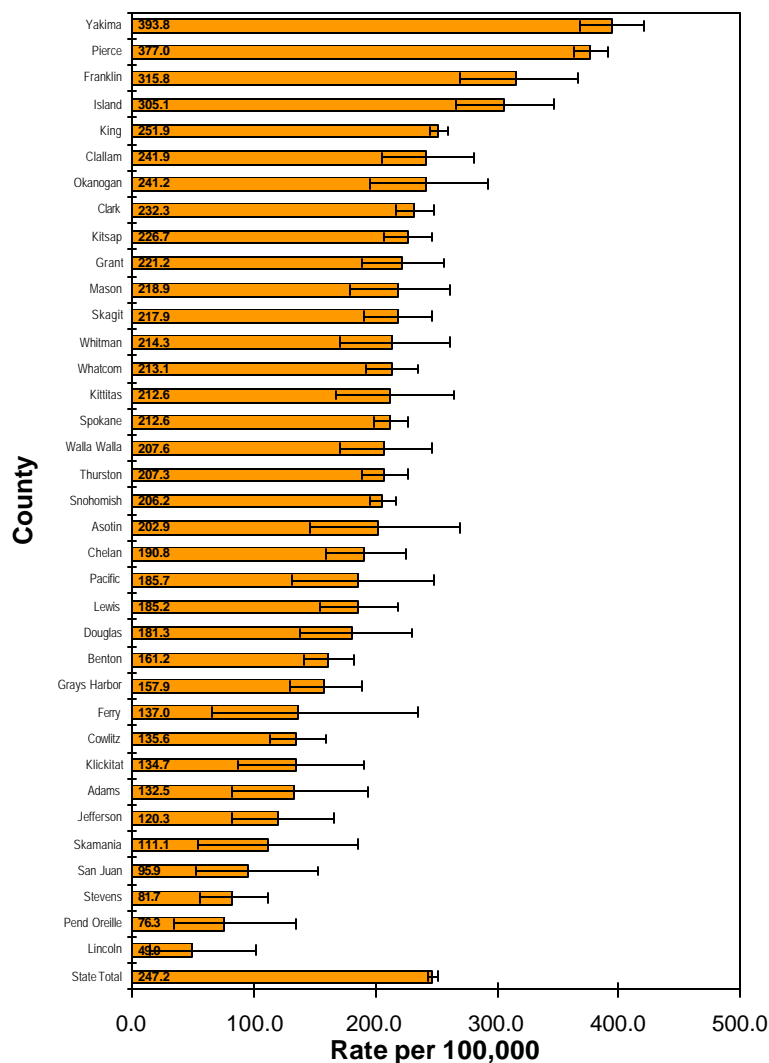


County-Level Chlamydia Trends

To assess the burden of disease and compare this burden across counties of differing population sizes, county-specific incidence rates were calculated (**Figure 3**). Thirty-six of Washington's 39 counties reported at least five cases of chlamydia in 2002. **Figure 4** shows these county-specific incidence rates ranked from highest to lowest.

Chlamydia incidence rates for males and females by county are presented in **Table 1**. The largest number of chlamydia cases (4,470) was reported by King County. King County also reported the largest number of male cases (1,474), however the highest male incidence rate, 206.5 per 100,000, was reported for Pierce County. King County reported the largest number of female chlamydia cases (2,996), and the female incidence rate, 336.2 per 100,000 for females in King County, was ranked eighth among counties in Washington State. The highest county-specific incidence rate for chlamydia among women was Yakima County with a rate of 642.6 per 100,000. Due to under-diagnosing, under-reporting, and the asymptomatic nature of the disease, chlamydia incidence rates are considered conservative. These assumptions make county-to-county comparisons generally unreliable, especially among counties with relatively small populations.

Figure 4. Chlamydia Incidence Rates by County, ranked from Highest to Lowest, Washington State, 2002



* This is the crude rate, not adjusted for age. Counties with fewer than 5 cases not shown. |—| = Confidence Interval ** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.

Gonorrhea

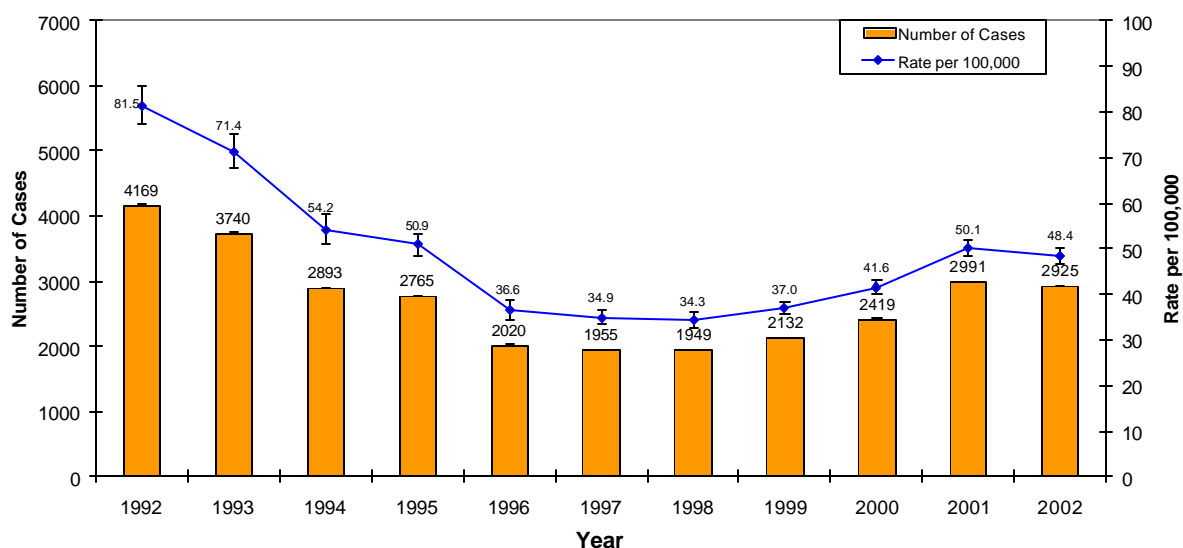
Infections due to *Neisseria gonorrhoeae* remain a major cause of morbidity in the United States. Negative consequences of gonorrhea infection may include Pelvic Inflammatory Disease (PID), tubal infertility, ectopic pregnancy, and chronic pelvic pain. Epidemiologic studies provide strong evidence that gonococcal infections may also facilitate HIV transmission.

State-Level Gonorrhea Trends

The national gonorrhea rate declined 73.8% from 1975 through 1997 and since that time has remained relatively stable at around 130 per 100,000. In Washington State, gonorrhea incidence also declined through 1998 but increased 46% from 1998 to a high of 50.1 per 100,000 in 2001. The reported gonorrhea rate in 2002 is 48.4 per 100,000. While somewhat lower than rates observed in 2001, it would be premature to interpret this decrease as indicative of a broad reversal in increasing disease trends (**Figure 5**).

- Gonorrhea rate in 2002 represents an increase of 40.5% since 1998, but has decreased slightly from the rate observed in 2001.
- Gonorrhea incidence is observed to be highest in the 20 – 24 age group for both males and females (200.4 and 194.0 per 100,000, respectively)
- The statewide increase noted from 1998 to 2001 is influenced in part by documented increases in gonorrhea infection among men-who-have-sex-with-men (MSM) in Western Washington.
- Statewide male-to-female case ratio in 2002 is 1.44 to 1.

Figure 5. Reported Gonorrhea Cases and Incidence Rates*(95%CI), Washington State, 1992-2002



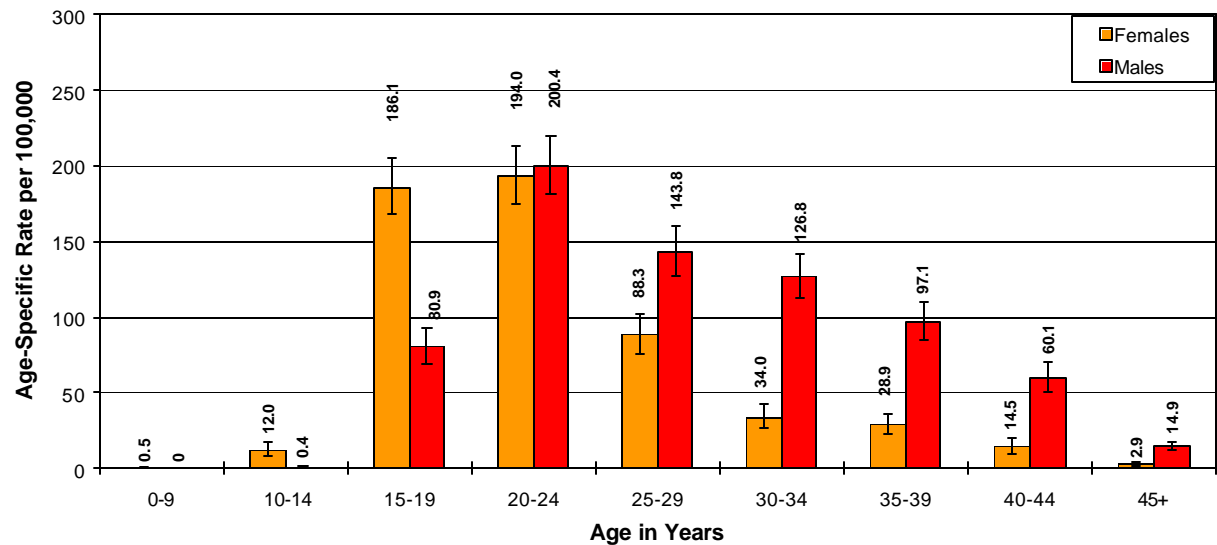
* This is the crude rate, not adjusted for age. —|— = Confidence Interval
 ** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.

Gonorrhea among MSM reported from counties in western Washington continues to widen the incidence rate gap between males and females with an increase in the number of cases of gonorrhea reported among men. In King County in 2002, the male to female case ratio is observed to be 2.33 male cases for each female case compared to a statewide male-to-female ratio of 1.44. Gonococcal infections in MSM reported by the Public Health – Seattle & King County (PHSKC) STD Clinic more than doubled from 1997 to 1998 and 19% of those cases were also reported to be co-infected with HIV.

It has been estimated that the rate of gonococcal infection in MSM in King County increased from 155 per 100,000 in 1994 to 727 per 100,000 in 2002 (Golden, 2003, personal communication) in contrast to the rate among presumed heterosexuals in King County of 82 per 100,000. Reported cases of gonorrhea in MSM seen in the PHSKC STD Clinic increased 81% in 2002 from cases reported in 2001, indicating a recent acceleration of the epidemic in MSM in King County.

The age distribution of gonorrhea differs between genders and age groups as seen in **Figure 6**. Nationally, gonorrhea incidence for females is highest among 15-19 year-olds and among males 20-24 year-old. For Washington State the peak incidence rate for both males and females is observed in the 20-24 year old age group; however, females 15 –19 experience similar incidence rates (186.1 versus 194.0 per 100,000 for females 15-19 and 20-24, respectively).

Figure 6. Age-Specific Gonorrhea Rates* (95% CI) by Gender, Washington State, 2002**



* Age missing for 13 (0.99%) of cases and excluded from calculated rate.
 ** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate. —|— = Confidence Interval

The greatest incidence of disease among females, 66.1% of total female morbidity in 2002, is among 15-24 year olds, while for males the burden of disease is distributed more evenly among those 25 and older. Males had a higher gonorrhea incidence rate (57.1 per 100,000) than females in 2002 (39.3 per 100,000). Factors contributing to the different distribution of gonorrhea incidence in different age groups among men and women are the presumed age gap between men and women in sexual relationships as well as the previously noted outbreak among MSM whose median reported age was 30 (*ibid*). Gonococcal infection appears to be endemic in core MSM populations and recent evidence suggests that a greater proportion of infections in the overall population may be asymptomatic than previously assumed (Turner, Rogers, Miller, et al. 2002).

In Washington State, racial disparities in disease burden clearly continue to exist, though a decrease in rate is noted among Blacks from 523.5 per 100,000 in 2001 to 444.1 per 100,000 in 2002. In 2002, 19.1% of reported cases of gonorrhea were missing race data and 28.6% of case reports were missing ethnicity data. Given the high proportion of cases missing these data, no meaningful statements relating to relative difference or similarity in rates between these groups can be made, with the exception that rates observed for Blacks exceed those of other racial groups by a significant percentage despite the decline in blacks noted previously. Table B shows reported cases and incidence rates calculated for the Census 2000 race categorization.

Table B. Gonorrhea Cases and Rates for 2001 and 2002 by Census 2000 Race Categories,

Race Category	Cases in 2001*	Rate per 100,000**	Cases in 2002*	Rate per 100,000**
White	1215	24.9	1323	26.8
Black	1001	523.5	866	444.1
Native American/Ak. Native	78	81.6	88	92
Asian	56	17	77	23.3
Native Hawaiian/Other P.I.	10	41.8	30	122.2
Other Race	45	19.3	49	20.9
Multiple Race	39	18.1	59	27
Hispanic Origin***	260	58	216	47.7

Race data missing for 18.1%, ethnicity data missing for 29.8% of cases in 2001.

Race data missing for 19.1%, ethnicity data missing for 28.6% of cases in 2002.

* Due to multiple race option, total will exceed number of reported cases.

** Denominators Washington State Adjusted Population Projections based on OFM population growth estimates, Feb 2003.

***Ethnicity not exclusive of race, i.e. cases can be counted as both White and Hispanic.

Lack of a true biological basis for race and no objective standards for racial/ethnic classification in disease surveillance argues for a cautious approach to interpreting disease incidence rates by race or ethnicity. Race and ethnicity may be correlated with other potentially significant ecological determinants of health status, such as socio-economic status, geographic variation in access to health care services, and sexual mixing patterns; analysis by race and ethnicity is confounded by these unknown factors.

County-Level Gonorrhea Trends

The distribution of gonorrhea not only differs by gender, age, and race, as noted above, it also differs by geography. At the county-level, gonorrhea incidence impacts dense urban versus rural counties differently (**Figures 7 & 8**):

- Highest gonorrhea incidence rate is observed for Pierce County 87.7 per 100,000
- King County has the second highest observed rate at 82.4 per 100,000
- Clark and Kitsap Counties are observed to have the third and fourth highest rates in Washington State, though they are below the statewide rate of 48.4 per 100,000

To further illustrate the differences in gonorrhea disease burden across counties, gender-specific and age-specific rates were calculated. Gonorrhea incidence rates for males and females by county are presented in **Table 3**. For many counties in Washington State, there were either no gonorrhea cases or too few cases to calculate a stable incidence rate by gender. Among the 16 counties with sufficient cases to allow calculation of a

gender-specific incidence rate, Pierce County had the highest rate for females at 93 per 100,000 and King County had the highest rate for males at 116 per 100,000, providing further evidence for the ongoing gonorrhea epidemic among MSM.

Figure 7. Gonorrhea Incidence Rates by County, Washington State, 2002

Gonorrhea

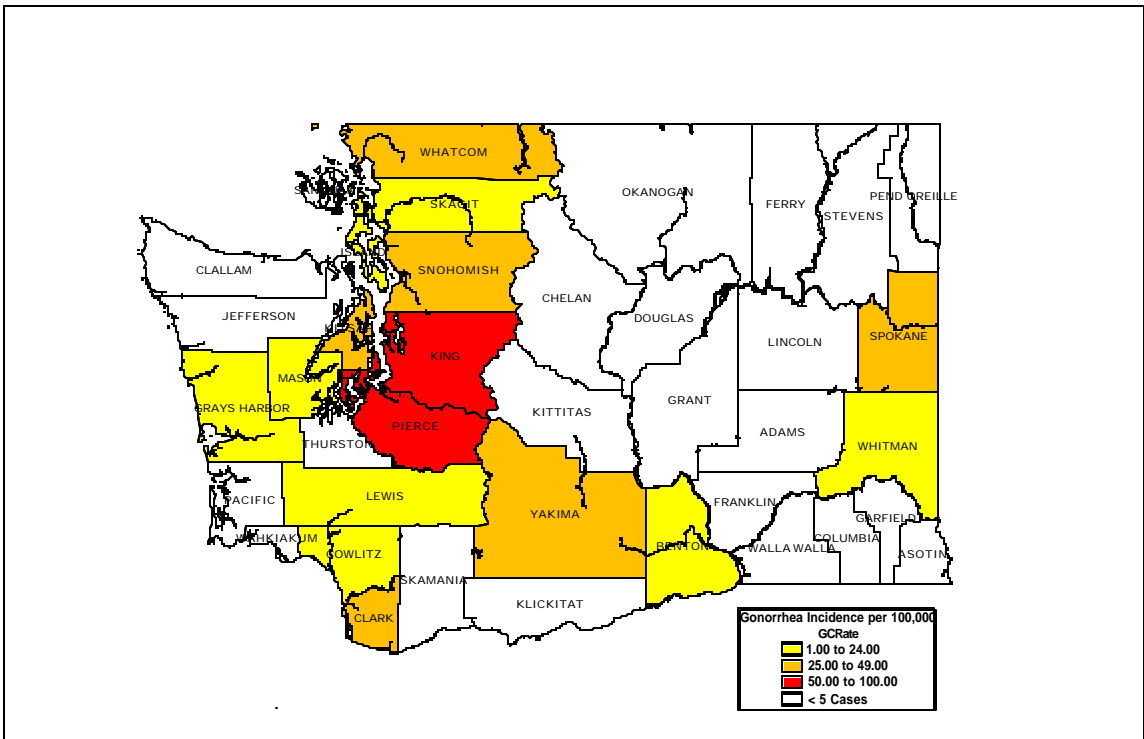
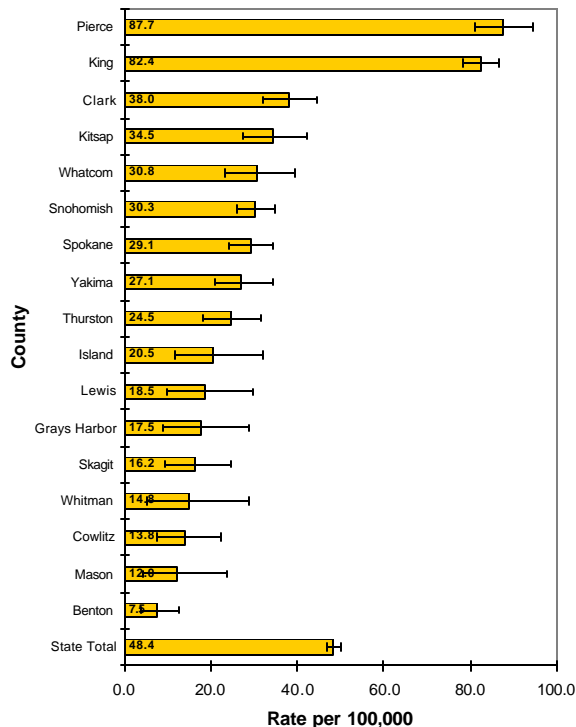


Figure 8. Gonorrhea Incidence Rate by County, Ranked Highest to Lowest, Washington State, 2002



* This is the crude rate, not adjusted for age. Counties with fewer than 5 cases not shown. —| = Confidence Interval
 ** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.

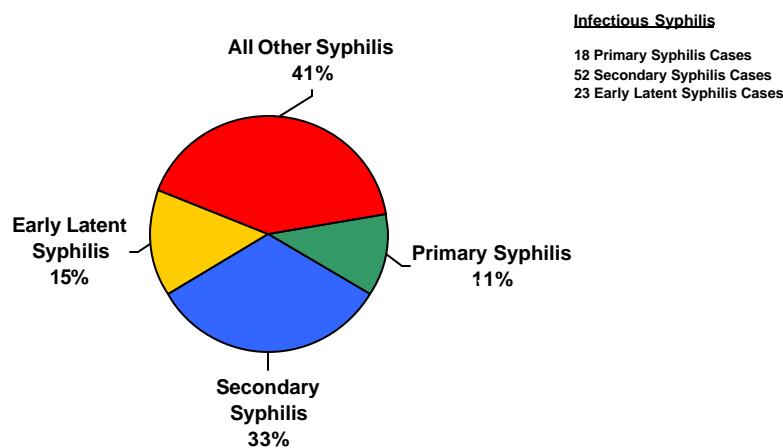
Syphilis

Syphilis is caused by infection with the spirochete (a slender, spiral-shaped, highly mobile bacteria) *Treponema pallidum*, and has four distinct stages - primary, secondary, latent and late latent. A painless genital ulcer that will resolve spontaneously without treatment characterizes primary syphilis infection. Secondary infection most commonly presents as a rash of varying duration, which may be recurrent. An infected person who does not get treatment may infect others during the first two stages (primary, secondary). Early latent syphilis is defined as an infection that is less than one year in duration and primary, secondary and early latent infection are also perinatally infectious. A relapse in secondary symptoms is also considered an early latent infection. Trans-placental transmission of syphilis is a potential cause of fetal loss and congenital abnormalities. In the late latent stage, untreated syphilis, although not contagious, can cause serious heart abnormalities, mental disorders, blindness, other neurological problems and death. All four stages of syphilis were reported in Washington State in 2002 (**Figure 9**).

State-Level Syphilis Trends

- Incidence rate for primary and secondary (P & S) syphilis has increased slightly to 1.2 per 100,000 in 2002.
- An outbreak of syphilis among men who have sex with men in King County continues, many of whom are HIV+.

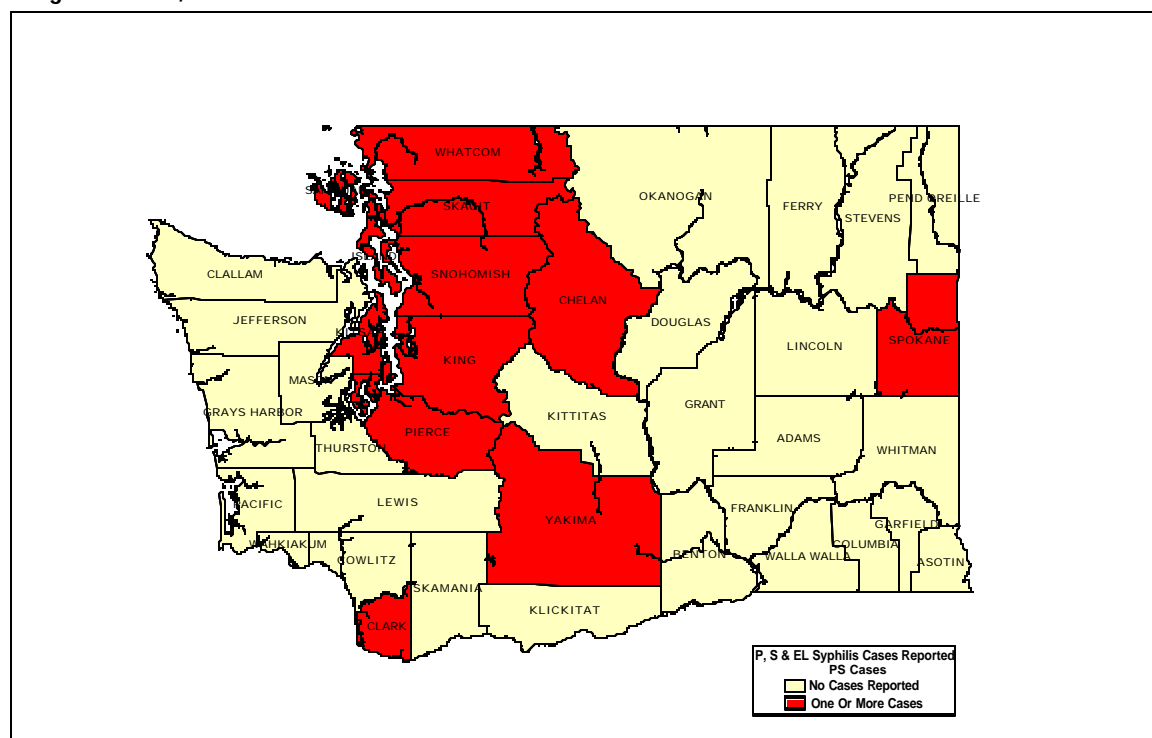
Figure 9. Syphilis Cases by Disease Stage, Washington State, 2002



*Reported syphilis cases, n=158

Of 69 primary and secondary syphilis cases reported in 2002, 50 (72.5%) were reported from King County (**Figure 10, Figure 11**). This pattern has been observed since 1997 in contrast to previous outbreaks where a greater proportion of cases were reported from counties other than King County. There continues to be a large disparity between male and female rates (**Figure 12**), which strongly suggests that the ongoing syphilis outbreak in Seattle-King County involves primarily MSM. Only four female cases of early syphilis were reported in 2002, and these cases were reported from outside of King County. Two cases of congenital syphilis were reported in 2002, both cases occurring as a result of contact with infected persons outside of Washington State.

Figure 10. Number of Early Syphilis Cases (Primary, Secondary & Early Latent), Washington State, 2002



In 1996, King County reported only a single case of P & S syphilis. In 2002, 50 cases of P & S syphilis were reported from King County. As noted above, this outbreak continues to be centered primarily among men who have sex with men. It has been proposed that the transmission behaviors responsible for this outbreak have occurred primarily in anonymous and multi-partner sex environments and two-thirds of these cases are also HIV positive. These findings strongly reinforce the importance of routine screening of MSM for STDs in primary HIV care settings. Preliminary research also suggests that the natural history of syphilis may be accelerated in HIV positive individuals, possibly leading to early central nervous system (CNS) involvement. Five cases of neurosyphilis were reported in 2002, but this may be misleading in that syphilis cases staged as primary, secondary or early latent would not be reported as neurosyphilis despite CNS involvement. Seven additional cases of primary, secondary and early latent syphilis also had neurosyphilis based on clinical records from one clinic.

Cases of P & S and early latent syphilis reported statewide in 2002 increased 22.4% from cases reported in 2001. Of note in **Figure 9** is the relatively high proportion of secondary stage disease versus primary and early latent reported in 2001. The expected ratio would be approximately one to one in the relationship between P &

S and early latent. The fact that there is a larger proportion in the secondary stage of disease suggests that, for reasons discussed above, there continues to be an unrecognized burden of disease in the community and that continued surveillance, education and sustainable interventions are necessary for the control of infectious syphilis.

Figure 11. Reported Primary and Secondary Syphilis Cases and Incidence Rate, King County vs Washington State, 1992 - 2000

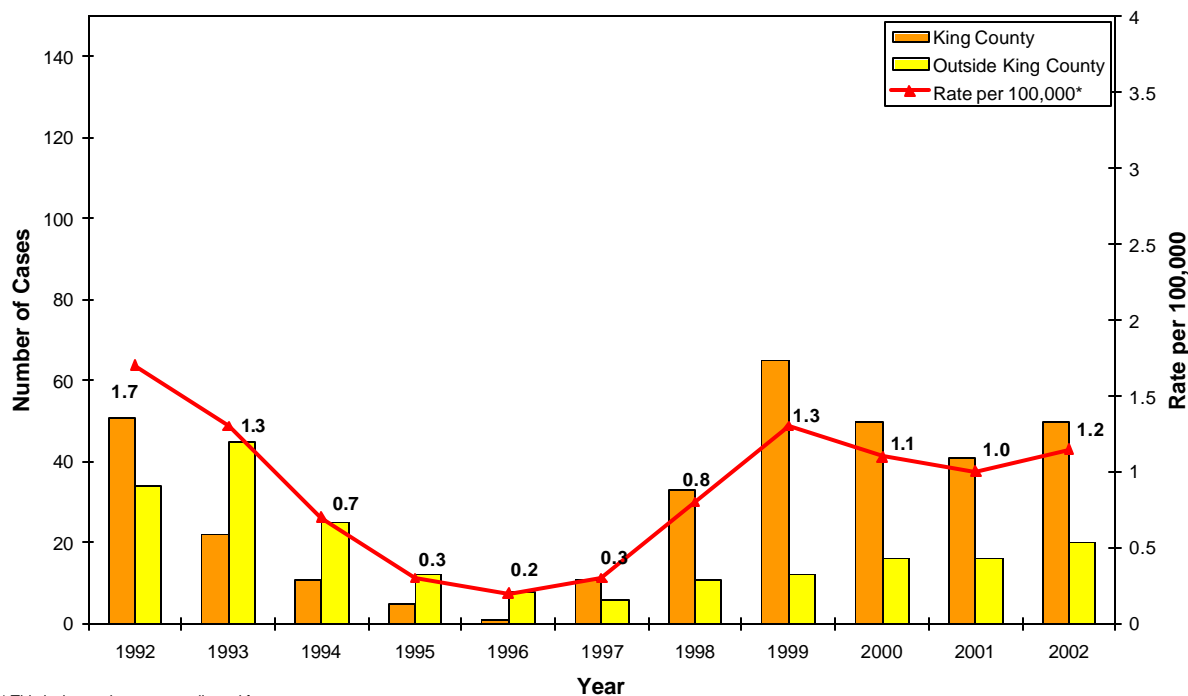
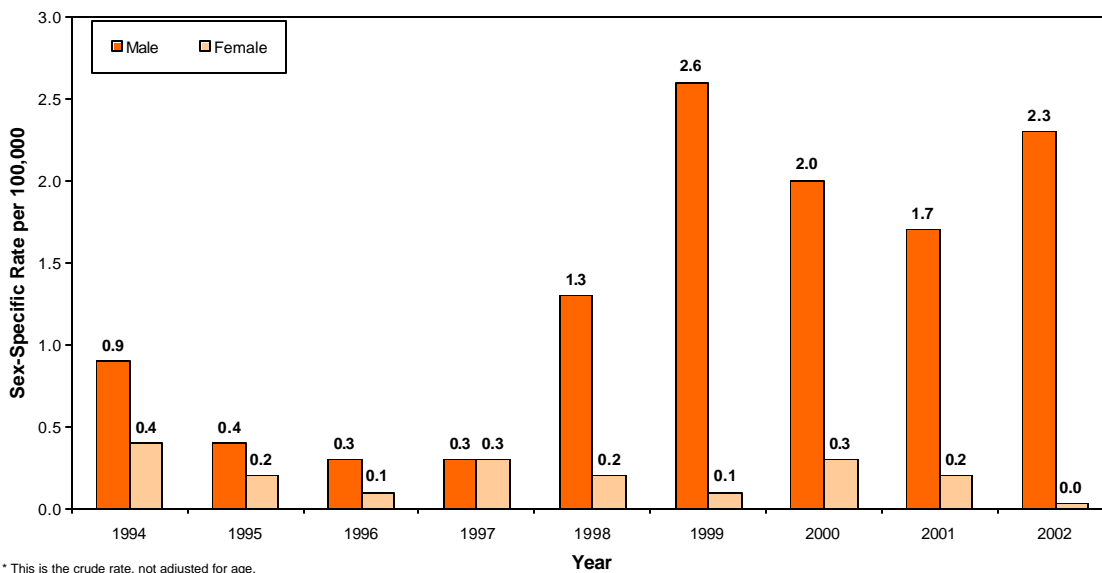


Figure 12. Primary and Secondary Syphilis Incidence Rates, Males vs. Females, Washington State, 1994 - 2002



Other STDs

In addition to chlamydia, gonorrhea, and syphilis there are four additional STDs that are currently reportable to the state Department of Health. Initial genital herpes infection, chancroid, lymphogranuloma venereum (LGV), and granuloma inguinale (GI) currently require reporting by health care providers.

Genital Herpes, Initial Infection

Washington State is one of a handful of states that require reporting of initial infection of genital herpes. Only the initial infection is tracked in the state surveillance system. In 2002, 1,908 cases of initial herpes infection and three cases of neonatal herpes were reported (31.6 per 100,000 persons). Unlike chlamydia and gonorrhea, a suspected herpes infection does not require laboratory confirmation in order for the case to be reported to the state health department. Given recent CDC estimates of genital herpes prevalence in the United States, cases of initial genital herpes reported in Washington State are most likely an underestimation of true incidence.

Others

Chancroid, LGV, and GI are very rare STDs. A total of 38 cases of chancroid were reported nationwide in 2001, with two states (South Carolina & Texas) reporting 55.3% of this total. One case of chancroid was reported in 2002; no cases of LGV or GI were reported in Washington State in 2002.

Table 1
Reported Chlamydia Cases and Incidence Rates
By Sex and County

COUNTY	2002 POPLUATION		CHLAMYDIA			
	MALE	FEMALE	MALE	RATE/100,000	FEMALE	RATE/100,000
Adams	8,485	8,115	8	94	14	173
Asotin	9,869	10,831	6	61	36	332
Benton	73,389	74,211	44	60	194	261
Chelan	33,672	33,928	30	89	99	292
Clallam	32,084	32,816	20	62	137	417
Clark	180,432	182,968	219	121	625	342
Columbia	2,001	2,099	0	0	3	*
Cowlitz	46,797	47,603	21	45	107	225
Douglas	16,412	16,688	14	85	46	276
Ferry	3,787	3,513	2	*	8	228
Franklin	26,791	24,509	30	112	132	539
Garfield	1,189	1,211	0	0	1	*
Grant	39,073	37,327	34	87	135	362
Grays Harbor	34,012	34,388	17	50	91	265
Island	36,613	36,487	51	139	172	471
Jefferson	13,200	13,400	11	83	21	157
King	883,181	891,119	1,474	167	2,996	336
Kitsap	118,935	115,765	126	106	406	351
Kittitas	17,289	17,511	18	104	56	320
Klickitat	9,635	9,665	6	62	20	207
Lewis	34,818	35,382	24	69	106	300
Lincoln	5,059	5,141	2	*	3	*
Mason	25,745	24,055	36	140	73	303
Okanogan	19,844	19,956	18	91	78	391
Pacific	10,415	10,585	10	96	29	274
Pend Oreille	5,927	5,873	2	*	7	119
Pierce	360,705	364,295	745	207	1,988	546
San Juan	7,123	7,477	3	*	11	147
Skagit	52,060	53,040	38	73	191	360
Skamania	4,985	4,915	3	*	8	163
Snohomish	314,322	313,678	331	105	964	307
Spokane	208,924	216,676	182	87	723	334
Stevens	20,125	20,275	7	35	26	128
Thurston	104,015	108,285	105	101	335	309
Wahkiakum	1,902	1,898	1	*	2	*
Walla Walla	28,211	27,189	25	89	90	331
Whatcom	84,872	87,328	73	86	294	337
Whitman	20,546	20,054	32	156	55	274
Yakima	112,326	112,674	162	144	724	643
STATE TOTAL	3,008,770	3,032,930	3,930	131	11,006	363

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Table 2
Reported Chlamydia Cases and Incidence Rates
By Age (15-24 Years) and County

COUNTY	2001 POPULATION		CHLAMYDIA			
	15-19	20-24	15-19	RATE/100,000	20-24	RATE/100,000
Adams	1,508	1,129	7	464	7	620
Asotin	1,528	1,156	18	1,178	13	1,125
Benton	12,085	8,757	92	761	101	1,153
Chelan	5,251	3,827	44	838	42	1,097
Clallam	4,477	2,981	71	1,586	49	1,644
Clark	26,169	22,050	297	1,135	281	1,274
Columbia	295	194	2	*	1	*
Cowlitz	6,906	5,508	49	710	42	763
Douglas	2,631	1,812	22	836	20	1,104
Ferry	693	334	7	1,010	1	*
Franklin	4,690	3,989	38	810	74	1,855
Garfield	205	77	1	*	0	0
Grant	6,666	5,214	69	1,035	52	997
Grays Harbor	5,214	3,668	45	863	41	1,118
Island	4,821	4,681	62	1,286	99	2,115
Jefferson	1,556	887	10	643	18	2,029
King	110,464	124,230	1,411	1,277	1,574	1,267
Kitsap	17,328	15,855	171	987	230	1,451
Kittitas	3,375	5,668	15	444	49	865
Klickitat	1,451	816	13	896	7	858
Lewis	5,655	3,905	51	902	46	1,178
Lincoln	722	327	4	*	1	*
Mason	3,534	2,625	38	1,075	43	1,638
Okanogan	3,141	1,914	37	1,178	29	1,515
Pacific	1,411	795	19	1,347	9	1,132
Pend Oreille	878	398	4	*	3	*
Pierce	54,567	51,438	956	1,752	1,077	2,094
San Juan	743	441	7	942	1	*
Skagit	8,062	6,188	81	1,005	79	1,277
Skamania	760	418	2	*	5	1,196
Snohomish	44,778	38,617	478	1,067	456	1,181
Spokane	33,406	32,173	328	982	315	979
Stevens	3,376	1,627	15	444	13	799
Thurston	16,227	14,193	144	887	183	1,289
Wahkiakum	261	137	1	*	1	*
Walla Walla	4,878	5,139	42	861	40	778
Whatcom	14,335	18,004	134	935	145	805
Whitman	4,987	9,865	23	461	52	527
Yakima	18,794	15,694	325	1,729	303	1,931
STATE TOTAL	437,828	416,731	5,133	1,172	5,502	1,320

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Table 3
Reported Gonorrhea Cases and Incidence Rates
By Sex and County

COUNTY	2002 POPULATION		GONORRHEA			
	MALE	FEMALE	MALE	RATE/100,000	FEMALE	RATE/100,000
Adams	8,485	8,115	0	0	0	0
Asotin	9,869	10,831	1	*	0	0
Benton	73,389	74,211	5	7	6	8
Chelan	33,672	33,928	3	*	0	0
Clallam	32,084	32,816	0	0	2	*
Clark	180,432	182,968	63	35	75	41
Columbia	2,001	2,099	0	0	0	0
Cowlitz	46,797	47,603	7	15	6	13
Douglas	16,412	16,688	0	0	3	*
Ferry	3,787	3,513	0	0	0	0
Franklin	26,791	24,509	2	*	2	*
Garfield	1,189	1,211	0	0	0	0
Grant	39,073	37,327	2	*	2	*
Grays Harbor	34,012	34,388	5	15	7	20
Island	36,613	36,487	11	30	4	*
Jefferson	13,200	13,400	2	*	0	0
King	883,181	891,119	1,024	116	438	49
Kitsap	118,935	115,765	35	29	46	40
Kittitas	17,289	17,511	2	*	0	0
Klickitat	9,635	9,665	2	*	0	0
Lewis	34,818	35,382	5	14	8	23
Lincoln	5,059	5,141	0	0	0	0
Mason	25,745	24,055	3	*	3	*
Okanogan	19,844	19,956	3	*	1	*
Pacific	10,415	10,585	0	0	0	0
Pend Oreille	5,927	5,873	0	0	0	0
Pierce	360,705	364,295	298	83	338	93
San Juan	7,123	7,477	1	*	0	0
Skagit	52,060	53,040	5	10	12	23
Skamania	4,985	4,915	0	0	1	*
Snohomish	314,322	313,678	113	36	77	25
Spokane	208,924	216,676	58	28	66	30
Stevens	20,125	20,275	1	*	1	*
Thurston	104,015	108,285	27	26	25	23
Wahkiakum	1,902	1,898	0	0	1	*
Walla Walla	28,211	27,189	1	*	2	*
Whatcom	84,872	87,328	19	22	34	39
Whitman	20,546	20,054	5	24	1	*
Yakima	112,326	112,674	25	22	36	32
STATE TOTAL	3,008,770	3,032,930	1,728	57	1,197	39

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Table 4
Reported Gonorrhea Cases and Incidence Rates
By Age (15-24 Years) and County

COUNTY	2002 POPULATION		GONORRHEA			
	15-19	20-24	15-19	RATE/100,000	20-24	RATE/100,000
Adams	1,508	1,129	0	0	0	0
Asotin	1,528	1,156	0	0	1	*
Benton	12,085	8,757	3	*	5	57
Chelan	5,251	3,827	1	*	1	*
Clallam	4,477	2,981	2	*	0	0
Clark	26,169	22,050	24	92	51	231
Columbia	295	194	0	0	0	0
Cowlitz	6,906	5,508	4	*	2	*
Douglas	2,631	1,812	1	*	0	0
Ferry	693	334	0	0	0	0
Franklin	4,690	3,989	1	*	0	0
Garfield	205	77	0	0	0	0
Grant	6,666	5,214	1	*	2	*
Grays Harbor	5,214	3,668	1	*	3	*
Island	4,821	4,681	2	*	4	*
Jefferson	1,556	887	0	0	1	*
King	110,464	124,230	223	202	344	277
Kitsap	17,328	15,855	19	110	38	240
Kittitas	3,375	5,668	1	*	0	0
Klickitat	1,451	816	0	0	1	*
Lewis	5,655	3,905	5	88	4	*
Lincoln	722	327	0	0	0	0
Mason	3,534	2,625	2	*	4	*
Okanogan	3,141	1,914	2	*	1	*
Pacific	1,411	795	0	0	0	0
Pend Oreille	878	398	0	0	0	0
Pierce	54,567	51,438	171	313	204	397
San Juan	743	441	0	0	0	0
Skagit	8,062	6,188	5	62	6	97
Skamania	760	418	0	0	1	*
Snohomish	44,778	38,617	39	87	61	158
Spokane	33,406	32,173	25	75	33	103
Stevens	3,376	1,627	1	*	1	*
Thurston	16,227	14,193	16	99	13	92
Wahkiakum	261	137	0	0	1	*
Walla Walla	4,878	5,139	0	0	2	*
Whatcom	14,335	18,004	10	70	19	106
Whitman	4,987	9,865	2	*	4	*
Yakima	18,794	15,694	17	90	14	89
STATE TOTAL	437,828	416,731	578	132	821	197

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Table 5
Reported STD Cases and Incidence Rates
By Disease and County

COUNTY	POPULATION	CHLAMYDIA			GONORRHEA		
		CASES	RATE/100,000	RANK	CASES	RATE/100,000	RANK
Adams	16,600	22	133	30	0	0	0
Asotin	20,700	42	203	20	1	*	*
Benton	147,600	238	161	25	11	7	17
Chelan	67,600	129	191	21	3	*	*
Clallam	64,900	157	242	6	2	*	*
Clark	363,400	844	232	8	138	38	3
Columbia	4,100	3	*	*	0	0	*
Cowlitz	94,400	128	136	28	13	14	15
Douglas	33,100	60	181	24	3	*	*
Ferry	7,300	10	137	27	0	0	*
Franklin	51,300	162	316	3	4	*	*
Garfield	2,400	1	*	*	0	0	*
Grant	76,400	169	221	10	4	*	*
Grays Harbor	68,400	108	158	26	12	18	12
Island	73,100	223	305	4	15	21	10
Jefferson	26,600	32	120	31	2	*	*
King	1,774,300	4,470	252	5	1,462	82	2
Kitsap	234,700	532	227	9	81	35	4
Kittitas	34,800	74	213	15	2	*	*
Klickitat	19,300	26	135	29	2	*	*
Lewis	70,200	130	185	23	13	19	11
Lincoln	10,200	5	49	36	0	0	*
Mason	49,800	109	219	11	6	12	16
Okanogan	39,800	96	241	7	4	*	*
Pacific	21,000	39	186	22	0	0	*
Pend Oreille	11,800	9	76	35	0	0	*
Pierce	725,000	2,733	377	2	636	88	1
San Juan	14,600	14	96	33	1	*	*
Skagit	105,100	229	218	12	17	16	13
Skamania	9,900	11	111	32	1	*	*
Snohomish	628,000	1,295	206	19	190	30	6
Spokane	425,600	905	213	16	124	29	7
Stevens	40,400	33	82	34	2	*	*
Thurston	212,300	440	207	18	52	24	9
Wahkiakum	3,800	3	*	*	1	*	*
Walla Walla	55,400	115	208	17	3	*	*
Whatcom	172,200	367	213	14	53	31	5
Whitman	40,600	87	214	13	6	15	14
Yakima	225,000	886	394	1	61	27	8
STATE TOTAL	6,041,700	14,936	247	636	2,925	48	

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Table 5 (cont.)
Reported STD Cases and Incidence Rates
By Disease and County

2002		PRIMARY & SECONDARY	EARLY LATENT	LATE LATENT	TOTAL ALL SYPHILIS	INITIAL HERPES	RATE/100,000
COUNTY	POPULATION						
Adams	16,600	0	0	0	0	6	36
Asotin	20,700	0	0	0	0	11	53
Benton	147,600	0	0	1	1	34	23
Chelan	67,600	0	1	0	1	15	22
Clallam	64,900	0	0	0	0	30	46
Clark	363,400	2	1	2	5	56	15
Columbia	4,100	0	0	0	0	0	0
Cowlitz	94,400	0	0	0	0	15	16
Douglas	33,100	0	0	1	1	6	18
Ferry	7,300	0	0	0	0	0	0
Franklin	51,300	0	0	1	1	10	19
Garfield	2,400	0	0	0	0	0	0
Grant	76,400	0	0	0	0	13	17
Grays Harbor	68,400	0	0	0	0	16	23
Island	73,100	4	0	1	5	22	30
Jefferson	26,600	0	0	0	0	7	26
King	1,774,300	50	10	36	96	650	37
Kitsap	234,700	2	0	1	3	80	34
Kittitas	34,800	0	0	0	0	12	34
Klickitat	19,300	0	0	0	0	5	26
Lewis	70,200	0	0	0	0	23	33
Lincoln	10,200	0	0	0	0	0	0
Mason	49,800	0	0	3	3	14	28
Okanogan	39,800	0	0	0	0	4	*
Pacific	21,000	0	0	0	0	4	*
Pend Oreille	11,800	0	0	0	0	4	*
Pierce	725,000	5	6	8	19	221	30
San Juan	14,600	0	1	0	1	5	34
Skagit	105,100	1	0	0	1	35	33
Skamania	9,900	0	0	0	0	0	0
Snohomish	628,000	4	2	6	12	268	43
Spokane	425,600	1	0	2	3	147	35
Stevens	40,400	0	0	0	0	2	*
Thurston	212,300	0	0	0	0	55	26
Wahkiakum	3,800	0	0	0	0	0	0
Walla Walla	55,400	0	0	1	1	9	16
Whatcom	172,200	0	1	0	1	55	32
Whitman	40,600	0	0	0	0	4	*
Yakima	225,000	1	1	0	2	76	34
STATE TOTAL	6,041,700	70	23	63	156	1,914	32
		Rate:1.0	Rate:0.3	Rate:1.6	**Rate:2.9		

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Appendix

References

Scholes D, Stergachis A, Heidrich FE, Andrilla H, Holmes KK, Stamm WE. *Prevention of Pelvic Inflammatory Disease by Screening for Cervical Chlamydial Infection*, N Engl J Med 1996;34(21):1362-66

Turner, CF; Rogers, SM; Miller, HG, et. al, *Untreated Gonococcal and Chlamydial Infection in a Probability Sample of Adults*, JAMA. 2002;287:726-733.

Fleming, DT; Wasserheit, JN, *From Epidemiological Synergy to Public Health Policy and Practice: the Contribution of Other Sexually Transmitted Diseases to Sexual Transmission of HIV Infection*, Sexually Transmitted Infections, Volume(75)1, pp 3-17, February 1999

Resurgent Bacterial Sexually Transmitted Disease Among Men Who Have Sex With Men – King County, Washington, 1997-1999, MMWR Weekly, 48(35); 773-777, Centers for Disease Control and Prevention, Atlanta, Georgia, September 1999

Selvin, S. **Statistical Analysis of Epidemiologic Data**. Oxford University Press, New York and Oxford, 1996, pgs. 21-3.

Sexually Transmitted Diseases in America: How Many Cases and at What Cost?. Kaiser Family Foundation, Menlo Park, California, December 1998.

Sexually Transmitted Disease Surveillance, 2001. Centers for Disease Control and Prevention, National Center for HIV, STD, and TB Prevention, Division of STD Prevention, Atlanta, Georgia, September 2000.

Sexually Transmitted Disease Morbidity reports for 1997 - 2001 are also available on the World Wide Web at <http://www.doh.wa.gov/cfh/STD/morbidity.htm>

*The Department of Health works
to protect and improve the health
of people in Washington State*